

REMARKS

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, claim 4 has been cancelled, while claims 1 and 9 have been amended to include the limitations of cancelled claim 4. In addition, the claims have been amended for clarity.

The Examiner has rejected claims 1, 2, 4, 6(?) and 8-10 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,868,881 to Zwicker et al. The Examiner has further rejected claim 6 under 35 U.S.C. 103(a) as being unpatentable over Zwicker et al. In addition, the Examiner has rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Zwicker et al. in view of U.S. Patent 5,509,081 to Kuusama. Moreover, the Examiner has rejected claim 5 under 35 U.S.C. 103(a) as being unpatentable over Zwicker et al. in view of U.S. Patent 5,046,105 to Bohn. Furthermore, the Examiner has rejected claim 7 under 35 U.S.C. 103(a) as being unpatentable over Zwicker et al. in view of U.S. Patent 7,006,624 to Philipsson.

The Zwicker et al. patent discloses a method and system of background noise suppression in an audio circuit particularly for car radios, in which an input signal in three separate frequency bands is compared with an environmental noise signal in three respective frequency bands, the resultant signals being used to generate control signals for controlling amplification of the input signal in three respective frequency bands.

As noted in MPEP § 2131, it is well-founded that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The Examiner has indicated that "Zwicker et al discloses an audio conditioning apparatus according to claim 1, wherein gain dispatcher unit is comprised, arranged to allocate a maximum allowable gain, on the basis of available headroom for amplification (col. 1, lines 54-61)."

Applicant believes that the Examiner is mistaken. In particular, the noted section of Zwicker et al. states:

"It has previously been proposed to provide automatic volume control for vehicles in which a controller receives an input based on vehicle speed and/or engine speed. It also been proposed to install a microphone or similar apparatus in the engine compartment of the vehicle in order to measure engine noise and to then control the volume of reproduction as a function of engine noise."

Applicant submits that Zwicker et al. discloses controlling the volume of the radio in dependence on speed, or in dependence on engine noise. However, this has nothing to do with "headroom".

Applicant stresses that "headroom" relates to the overall amount of available amplification. As noted in the subject

specification on page 5, lines 23-26, "If there is not much headroom available, it has to be distributed among the volume, bass and treble amplifications. Otherwise, a volume amplification may be calculated and applied which consumes all available headroom, so that no bass and treble amplification are possible anymore." Further, as described on page 10, lines 23-29, "A similar rationale lies behind the introduction of a gain dispatcher unit 134. Given the amount of headroom, it is arranged to calculate a maximum allowable volume gain GMV, and/or a maximum allowable bass gain GMB, and/or a maximum allowable treble gain GMT, summarized in Eq. 1 as GM. E.g. if the signal can still be amplified 4 times until all headroom is consumed, and the volume gain GV introduces an amplification of 2 times (in addition to the current amplification by the amplification set by the listener on the volume control 130), then there is still a factor 2 to be divided among the bass and treble gain."

Applicant therefore submit that Zwicker et al. neither discloses nor suggest "a gain dispatcher unit for allocating a maximum allowable gain of the volume amplification unit and the further amplification unit on the basis of available headroom for amplification".

Claim 6 includes the limitation "wherein said audio conditioning apparatus is connectable to a headphone loudspeaker usable for reproduction of the audio signal, and wherein said audio conditioning apparatus further comprises an active noise canceling unit for substantially cancelling environmental noise in a

cancellation band of frequencies, the environmental noise being measurable by a microphone."

While Zwicker et al. includes a microphone for measuring the environmental noise, and while the Examiner invokes Official Notice to show that it would be obvious to connect headphone loudspeakers to the system, Applicant submits that Zwicker et al. neither discloses nor suggests an active noise canceling unit. In particular, as described in the specification on page 13, lines 5-7, "An active noise canceling unit produces a signal of opposite sign to the noise measured by the microphone 104, which leads to the fact that the noise is substantially cancelled and hence no longer audible." Rather, Zwicker et al. discloses noise compensation circuits which "mask" noise by changing the relative volume of the noise with respect to the desired signal. However, there is no disclosure of cancelling the environmental noise by generating a signal of opposite sign to the measured noise, and applying the opposite sign signal to the headphone loudspeakers.

The Kuusama patent discloses a sound reproduction system, in which a noise level signal "is applied to block 8, wherein it is processed to eliminate changes that are too abrupt from the signal. By such processing, the occurrence of changes that are too abrupt in the gain of the amplifier 2 are prevented. The attack and decay processing of block 8 provides different time constants for reducing the gain of amplifier 2 (attack) and increasing the gain (decay)." While, arguably this may be equated to gain consistency unit of claim 3, Applicant submits that Kuusama does not supply

that which is missing from Zwicker et al., i.e., "a gain dispatcher unit for allocating a maximum allowable gain of the volume amplification unit and the further amplification unit on the basis of available headroom for amplification".

The Bohn patent discloses an audio signal equalizer having accelerated slope phase shift compensated filters, in which the filter means includes a shelving filter circuit. However, Applicant submits that Bohn does not supply that which is missing from Zwicker et al., i.e., "a gain dispatcher unit for allocating a maximum allowable gain of the volume amplification unit and the further amplification unit on the basis of available headroom for amplification".

The Philipsson patent discloses a loudspeaker volume range control, in which in a hands-free telephone system, the distance between the microphone and the loudspeaker is determined in order to control the volume of the loudspeaker. However, Applicant submits that Philipsson does not supply that which is missing from Zwicker et al., i.e., "a gain dispatcher unit for allocating a maximum allowable gain of the volume amplification unit and the further amplification unit on the basis of available headroom for amplification", and "an active noise canceling unit for substantially cancelling environmental noise in a cancellation band of frequencies".

In view of the above, Applicant believes that the subject invention, as claimed, is neither anticipated nor rendered obvious

by the prior art, either individually or collectively, and as such,
is patentable thereover.

Applicant believes that this application, containing
claims 1-3 and 5-10, is now in condition for allowance and such
action is respectfully requested.

Respectfully submitted,

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